June, 2022

Fact Sheet:

How Intelligence Agencies Predict the Future.

All science defines itself by its ability to accurately, and reliably predict outcomes of particular circumstances; whether it's chemical reactions in a laboratory, outcomes of a physical disease, or the industrial output of an economy.

Environmental Sciences, whether biological or social, are also used by intelligence agencies so nations can prepare, and plan for the future. This job is delegated to analysts, who posses advanced degrees in fields such as Engineering. An analysts' job is far from the glamorous life often portrayed in films, and most usually spend much of their time behind desks, in common office buildings.

High-adventure hijinks are usually relegated to (what are known in business as,) Assets; disposable people, who are not on official payrolls. Due to the high-risk nature of foreign assignments it is not uncommon for these assets to be captured, or killed during their missions, and due to the high cost, and long lead time of training, analysts are often not the people put in harms way when push comes to shove.

In 1933 the United States authorized the Tennessee Valley Authority, a project which involved in the development of the Atomic Bomb used at Hiroshima in August 1945. Enriched Uranium however wasn't the only thing being manufactured in Tennessee, but conventional explosives as well, which started 9 years before the U.S. entered the War; the same year Hitler took control of the German Government.

> *"Between 1940 and 1945, U.S. and British air forces dropped 2.7 million tons of bombs on Europe."*[1]

Quickly compare that number to the amount of explosives used in Iraq during Operation Gulf Storm, an estimated 90,000 tons[2] of munitions, which lasted a mere 43 days, and one can quickly grasp the size of the war effort during WWII.

Here's the math:

For the U.S. WWII lasted 1,248 days.[3]

That equals roughly 2,093 tons of ordinance per day during Operation Gulf Storm; and 2,163 tons of ordinance per day during WII. An almost equal amount for the same time period.

However, not all bombs are created equal. During Gulf Storm precision munitions were used, in addition to stealth bombers, arguably creating a more effective force, than was available given technology during WWII.

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1 Higginbotham, Adam "There Are Still Thousands of Tons of Unexploded Bombs in Germany, Left Over From World War II," Smithsonian Magazine, January 2016.

2 Davis, Richard G. "Decisive Force: Strategic Bombing and the Gulf War. Air Force History and Museums Program," 1996, pp. 46.

3 (Not counting the 3,125 days in preparation leading up to official U.S. involvement, nearly twice the amount of time spent actually engaging the enemy in battle. Post-war restructuring was designed to keep the U.S. in a constant state of readiness, reducing the amount of time required to mobilize defense forces in the event of armed conflict.)

> *"If LINEBACKER I pointed to the future, LINEBACKER II sent a somewhat mixed signal to the analyst. . . LINEBACKER II intended to [force the enemy] back to the peace table."*

In only eleven days in 1972, U.S. bombers deployed 15,237 tons of ordinance in Vietnam; 1,385 tons per day, just more than half the average used during daily operations in either WWII, or Desert Storm.

(Keep in mind, these are merely quick figures for the purpose of demonstration. Complete details are available in official government reports, including extenuating factors.)

To successfully prosecute U.S. campaigns during WWII, it required industry to supply vast amounts of raw material; and for that, the Tennessee Valley Authority was created.

> *"(g) In the event it is not used for the fixation of nitrogen for agricultural purposes or leased, then the board shall maintain in stand-by condition nitrate plant numbered 2, or its equivalent, for the fixation of atmospheric nitrogen, for the production of explosives in the event of war or a national emergency until the Congress shall by joint resolution release the board from this obligation, and if any part thereof be used by the board for the manufacture or phosphoric acid or potash, the balance of nitrate plant numbered 2 shall be kept in stand-by condition."*

These heuristics can be applied not only to munitions, but the social sciences as well, for insight into the structure and operation of Governments. For example: By measuring internecine violence in a State, one can also estimate the relative strength of social ties vs. strength of the State.

> *"...over the past several centuries, nonpolitical violence (i.e., violence within societies between nonstate actors) has become less public, more private. Donald Black's (1976, 1983, 1993a) theoretical work on conflict management furnishes the tools for constructing an alternative theory in which the key factors are the weakening of social ties and the strengthening of the state,"*[4]

The study of these types of factors is known as Political Science; and requires years of study, in fields such as math, and history. Social scientists such as Herman Kahn (1965,) have even written about the politics of Diplomacy, from a similar standpoint.

(One might note that most third-world paramilitary groups don't employ such science in their campaigns; but are instead fought on the basis of religion, or other dogma as their guiding principle. That is known as ideologically motivated; which is what agencies such as the Department of Homeland Security screen for, during Enhanced Interrogation procedures.)

Conversely, the same principles should be used in governance. We can use these types of metrics to assess the geopolitical climate, and it's possible trajectory.

For example, Nitrogen wasn't the only raw-material used in the production of ordinance by the United States during WWII, but it is said that aluminum also played an outsized role. There are factories in the Tennessee Valley today which have "*the capacity to recycle 23 billions cans a year,"*[5] worth of aluminum.

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4 Cooney, Mark. "The privatization of violence." Criminology 41.4 (2003): 1377-1406.

5 "Constellium Business and sustainability performance report," Constellium SE, 2017.

Aluminum isn't the only raw material in high-demand, (as of June 2022) but also fertilizer feed-stocks, such as nitrogen, phosphoric acid, and potash; in addition to dairy by-products.

Ammonia synthesis is also being studied by Netherland's dairy industry; as part of the Climate Change agenda. Usage of these materials was analyzed by the U.S. Agricultural Adjustment Agency prior to WWII; Not the first thing that would ordinarily come to mind when discussing the Defense industry.

Errata:

- Schmidt, Daniel. "Comparaison Entre La Compagnie Nationale Du Rhone et la Tennessee Valley Authority," Lieu de publication inconnu: l'auteur, 1948.

- Oliveira, Diana, Patrick Fox, and James A. O'Mahony. "Byproducts from dairy processing." Byproducts from Agriculture and Fisheries: Adding Value for Food, Feed, Pharma, and Fuels, 2019, pp. 57-106.

- Kluber, L. A., et al. "Soil Respiration and Microbial Biomass from Soil Incubations with 13C Labeled Additions," ORNLTESSFA (Oak Ridge National Lab's Terrestrial Ecosystem Science Scientific Focus Area [ORNL TES SFA]), 2020.

- Mobley, Megan L., Matthew J. Cleary, and Ingrid C. Burke. "Inorganic nitrogen supply and dissolved organic nitrogen abundance across the US Great Plains," Plos one 9.9, 2014: e107775.

- [Van Dooren, H. J. C., et al. Gaseous emissions from bedded pack barns with wood chip floors: ammonia, nitrous oxide and methane emissions at barn level. no. 1163. Wageningen Livestock Research, 2019.]

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- [de Boer, H. C., Joachim Deru, and N. J. M. van Eekeren. Turning permanent grassland on sandy soil: effects on soil structure, rooting and grass yield. no. 947. Wageningen UR, Livestock Research, 2016.]

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- Tolley, H. R. (1934). The Program Planning Division of the Agricultural Adjustment Administration. Journal of Farm Economics, 16(4), 582. doi:10.2307/1231176

- [Pub. L. 73-67, "National Industrial Recovery Act," 1933.]

- [Pub. L. 111-5, "American Recovery and Reinvestment Act," 17 February 2009.]

- [Pub. L. 117-58, "Infrastructure Investment and Jobs Act," 15 November 2021.]

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